WEST BENGAL COUNCIL OF HIGHER SECONDARY EDUCATION
SYLLABUS FOR CLASSES XI AND XII
SECTOR: CONSTRUCTION
JOB ROLE: BRICK MASON

COURSE OVERVIEW:

At Construction site Brick Mason worker performs the basic operations related to construction of a building. He identifies and demonstrate safe use of hand and power tools/equipment used in construction. He Construct masonry structures using brick / bloc, execute plaster on internal & external surfaces of masonry and RCC structure, carry out waterproofing works for structures using cementitious materials etc. Construction site workers provide customers all the information available with them to help customers to select and care for building.

COURSE OBJECTIVE:

On completion of the course, students should be able to:

- Apply effective oral and written communication skills to interact with people and customers;
- Identify the principal components of a computer system;
- Demonstrate the basic skills of using computer;
- Demonstrate self-management skills;
- Demonstrate the ability to provide a self-analysis in context of entrepreneurial skills and abilities;
- Demonstrate the knowledge of the importance of green skills in meeting the challenges of sustainable development and environment protection;
- Identify and control hazards in the workplace that pose a danger or threat to their safety or health, or that of others.
- Identify and demonstrate safe use of hand and power tools/equipment used in construction;
- Gain insight into Brick Mason job role and its career progression
- Construct masonry structures using brick / bloc
- Execute plaster on internal & external surfaces of masonry and RCC structure
- Carry out waterproofing works for structures using cementitious materials
- Build structures using random rubble masonry
- Carry out IPS / Tremix flooring
- Work effectively in a team to deliver results at a construction site
- Plan and organize work to meet expected outcomes
- Work according to personal health, safety and environment protocol at construction site

COURSE STRUCTURE

JOB ROLE: BRICK MASON
SECTOR: CONSTRUCTION

Class	Semester	Contact Hours						Marks		
		Employability Skills	Domain Theory	Domain Practical	Practical Exam/Written Test/ Viva	Project (Practical File/Student Portfolio/ Viva Voce)	Total	Theory		Practical
XI	I	70	20	40	-	-	130	25	Sum of Sem I & Sem II = 50	NIL
	II	40	40	65	10	15	170	25		50
XII	III	70	30	30	-	-	130	25	Sum of Sem III & Sem IV = 50	NIL
	IV	40	50	55	10	15	170	25		50

JOB ROLE: BRICK MASON
Class XI [Total Theory Marks 25]
Class XI SEMESTER I TOPICS: (MCQ) MARKS: 25 [1 MARK PER QUESTION]

SL No.	Topic	Tuition Hours	Marks Allotted
	Part A: Employability Skills	**70**	
1	Unit 1: Communication Skill	25	**2**
2	Unit 2: Self-management Skill	25	**2**
3	Unit 3: ICT Skill	20	**2**
	Part B: Vocational Skills	**60**	
4	Unit 1: Masonry Work	60	**19**
Total		**130**	**25**

Class XI SEMESTER II TOPICS: [Short Answer Question, Descriptive Question] MARKS: 25

SL No.	Topic & Sub-Topics	Tuition Hours	Short Answer Type Question (8 Marks)	Descriptive Type Question (17 Marks)	Total
	Part A: Employability Skills	**40**			
1	Unit 4: Entrepreneurial Skill	25	**1**	**2**	**3**
2	Unit 5: Green Skill	15	**1**	**2**	**3**
	Part B: Vocational Skills	**105**			
3	Unit 2: Plastering work	60	**3**	**7**	**10**
4	Unit 3: Waterproofing works	45	**3**	**6**	**9**
	Part C: Practical Work	**10**			
5	Practical Examination	06			
6	Written Test	01			
7	Viva Voce	03			
	Part D: Project Work/ Field Visit	**15**			
8	Practical File / Student Portfolio	10			
9	Viva Voce	05			
Total		**170**	**8**	**17**	**25**

JOB ROLE: BRICK MASON
Class XII [Total Theory Marks 25]
Class XII SEMESTER III TOPICS: (MCQ) MARKS: 25 [1 MARK PER QUESTION]

SL No.	Topic	Tuition Hours	Marks Allotted
	Part A: Employability Skills	**70**	
1	Unit 1: Communication Skill	25	**2**
2	Unit 2: Self-management Skill	25	**2**
3	Unit 3: ICT Skill	20	**2**
	Part B: Vocational Skills	**60**	
4	Unit 1: Random rubble masonry	60	**19**
Total		**130**	**25**

Class XII SEMESTER IV TOPICS: [Short Answer Question, Descriptive Question] MARKS: 25

SL No.	Topic & Sub-Topics	Tuition Hours	Short Answer Type Question (8 Marks)	Descriptive Type Question (18 Marks)	Total
	Part A: Employability Skills	**40**			
1	Unit 4: Entrepreneurial Skill	25	**1**	**2**	**3**
2	Unit 5: Green Skill	15	**1**	**2**	**3**
	Part B: Vocational Skills	**105**			
3	Unit 2: IPS / Tremix and Vacuum Dewatered Flooring	70	**4**	**8**	**12**
4	Unit 3: Environment Health and Safety	35	**2**	**5**	**7**
	Part C: Practical Work	**10**			
5	Practical Examination	06			
6	Written Test	01			
7	Viva Voce	03			
	Part D: Project Work/ Field Visit	**15**			
8	Practical File / Student Portfolio	10			
9	Viva Voce	05			
Total		**170**	**8**	**17**	**25**

DETAIL SYLLABUS
CLASS - XI
SEMESTER – I

Part A: Employability Skills			
Unit 1: Communication Skills – III			
Learning Outcome	**Theory (10 hrs)**	**Practical (15 hrs)**	**Duration (25 hrs)**
1. Demonstrate the knowledge of communication	1. Introduction to the communication process 2. Importance of communication 3. Elements of communication. 4. Perspectives in communication Effective communication	1. Role-play on the communication process. 2. Group discussion on the importance of communication and factors affecting perspectives in communication. 3. Charts preparation on elements of communication. 4. Classroom discussion on the 7Cs (i.e. Clear, Concise, Concrete, Correct, Coherent, Courteous and Complete) for effective communication.	03
2. Demonstrate verbal communication	1. Verbal communication 2. Public Speaking	1. Role-play of a phone conversation. 2. Group activity on delivering a speech and practicing public speaking.	02
3. Demonstrate non-verbal communication	1. Importance of non-verbal communication 2. Types of non- verbal communication 3. Visual communication	1. Role-play on non-verbal communication. 2. Group exercise and discussion on Do's and Don'ts to avoid body language mistakes. 3. Group activity on methods of communication.	02
4. Demonstrate speech using correct pronunciation	1. Pronunciation basics 2. Speaking properly 3. Phonetics 4. Types of sounds	1. Group activities on practicing pronunciation.	01
5. Apply an assertive communication style	1. Important communication styles 2. Assertive communication 3. Advantages of assertive communication 4. Practicing assertive communication	1. Group discussion on communication styles 2. Group discussion on observing and sharing communication styles	03
6. Demonstrate the knowledge of saying no	1. Steps for saying 'No' 2. Connecting words	1. Group discussion on how to say 'No'	02
7. Identify and use parts of speech in writing	1. Capitalisation 2. Punctuation 3. Basic parts of speech 4. Supporting parts of speech	1. Group activity on identifying parts of speech 2. Writing a paragraph with punctuation marks	03

		3. Group activity on constructing sentences 4. Group activity on identifying parts of speech.	
8. Write correct sentences and paragraphs	1. Parts of a sentence 2. Types of object 3. Types of sentences 4. Paragraph	1. Activity on framing sentences 2. Activity on active and passive voice 3. Assignment on writing different types of sentences	02
9. Communicate with people	1. Greetings 2. Introducing self and others	1. Role-play on formal and informal greetings 2. Role-play on introducing someone 3. Practice and group discussion on how to greet different people.	02
10. Introduce yourself to others and write about oneself	1. Talking about self 2. Filling a form	1. Practicing self- introduction and filling up forms 2. Practicing self- introduction to others	01
11. Develop questioning skill	1. Main types of questions 2. Forming closed and open-ended questions	1. Practice exercise on forming questions 2. Group activity on framing questions	01
12. Communicate information about family to others	1. Names of relatives 2. Relations	1. Practice talking about family 2. Role-play on talking about family members.	01
13. Describe habits and routines	1. Concept of habits and routines	1. Group discussion on habits and routines 2. Group activity on describing routines	01
14. Ask or give directions to others	1. Asking for directions 2. Using landmarks	1. Role-play on asking and giving directions 2. Identifying symbols used for giving directions	01
Unit 2: Self-Management–III			
Learning Outcome	**Theory (10 hrs)**	**Practical (15 hrs)**	**Duration (25 hrs)**
1. Identify and analyse own strengths and weaknesses	1. Understanding self 2. Techniques for identifying strengths and weaknesses 3. Difference between interests and abilities	1. Activity on writing aims in life. 2. Preparing a worksheet on interests and abilities.	03
2. Demonstrate personal grooming skills	1. Guidelines for dressing and grooming 2. Preparing a personal grooming checklist	1. Role-play on dressing and grooming standards. 2. Self-reflection activity on various aspects of personal grooming.	04
4. Demonstrate the knowledge of working in	1. Describe the benefits of teamwork 2. Working in a team	1. Assignment on working in a team.	03

a team and participating in group activities		2. Self-reflection on team work.	
5. Develop networking skills	1. Benefits of networking skills 2. Steps to build networking skills	1. Group activity on networking in action. 2. Assignment on networking skills.	03
6. Describe the meaning and importance of self-motivation	1. Meaning of self-motivation 2. Types of motivation 3. Steps to building self-motivation	1. Activity on staying motivated 2. Assignment on reasons hindering motivation	03
7. Set goals	1. Meaning of goals and purpose of goal-setting 2. Setting SMART goals	1. Assignment on setting SMART goals 2. Activity on developing long- term and short-term goals using SMART method	03
8. Apply time management strategies and techniques	1. Meaning and importance of time management 2. Steps for effective time management	1. Preparing a checklist of daily activities	03
Unit 3: Information and Communication Technology-III			
Learning Outcome	**Theory (08 hrs)**	**Practical (12 hrs)**	**Duration (20 hrs)**
1. Create a document on the word processor	1. Introduction to ICT 2. Advantages of using a word processor 3. Work with Libre Office Writer	1. Demonstration and practice of the following: ● Creating a new document ● Typing text ● Saving the text ● Opening and saving afile on Microsoft ● Word/Libre Office Writer.	02
2. Identify icons on the toolbar	1. Status bar 2. Menu bar 3. Icons on the Menu bar 4. Multiple ways to perform a function	1. Group activity on using basic user interface of LibreOffice writer. 2. Group activity on working with Microsoft Word.	02
3. Save, close, open and print document	1. Save a word document 2. Close a word document 3. Open an existing document 4. Print	1. Group activity on performing the functions for saving, closing and printing documents in LibreOffice Writer. 2. Group activity on performing the functions for saving, closing and printing documents in Microsoft Word.	02
4. Format text in a word document	1. Change style and size of text 2. Align text 3. Cut, Copy, and Paste 4. Find and replace	1. Group activity on formatting text in LibreOffice Writer.	02

		2. Group activity on formatting text in Microsoft Word.	
5. Check spelling and grammar in a word document	1. Use of spell checker 2. Autocorrect	1. Group activity on checking spellings and grammar using LibreOffice Writer. 2. Group activity on checking spellings and grammar using Microsoft Word.	02
6. Insert lists, tables, pictures, and shapes in a word document	1. Insert bullet list 2. Number list 3. Tables 4. Pictures 5. Shapes	1. Practical exercise of inserting lists and tables using LibreOffice Writer.	03
7. Insert header, footer and page number in a word document	1. Insert header 2. Insert footer 3. Insert page number 4. Page count	1. Practical exercise of inserting header, footer and page numbers in LibreOffice Writer. 2. Practical exercise of inserting header, footer and page numbers in Microsoft Word.	03
8. Make changes by using the track change option in a word document	1. Tracking option 2. Manage option Compare documents	1. Group activity on performing track changes in LibreOffice Writer. 2. Group activity on performing track changes in Microsoft Word.	04

Part B: Vocational Skills			
Unit – 1: Masonry Work			
Learning Outcome	**Theory (20 Hrs)**	**Practical (40 Hrs)**	**Duration (60 Hrs)**
1. Describe Role of Brick Mason	1. Roles and responsibilities of brick mason. 2. Personal attributes of the brick mason 3. Career development options of a brick mason.	1. Draw a chart of career progression of brick mason.	5
2. Draw the sketches of brick work / paver block	1. Basic principles of measurement, simple arithmetic's and conversion of units of measurement 2. Importance of sketches for brick/paver block 3. Reading and interpretation of method statements, formats, permits, protocols, checklists for works	1. Reading and interpreting the sketches/basic working drawing for brick/block	5

3. Identify the various tools used in masonry work	1. Standard specification of all masonry tools and equipment, their care and maintenance 2. How to select and use tools such as measuring tape, trowels, floats, brushes, screed boards, straight edge, concrete mixer, mortar boards and stands, shovels, wheelbarrows, hawks, joint rules, mason's square	1. Identification of tools used in masonry work 2. Draw sketches of the tools 3. Perform a check of level using various levelling instruments.	05
4. Carryout vertical and horizontal alignment of masonry work	1. Basic levelling instruments like spirit level and water levelling, its setting and use 2. Determining vertical and horizontal alignment using thread line, spirit level, plum bob etc.	1. Visit the construction site and check the levelling and alignment using thread line, spirit level and plumb bob.	05
5. Identify the various types of construction materials	1. Type of raw material like cement, sand, aggregate, bricks/ blocks; the size and physical attributes of bricks/blocks	1. Identify the raw material and do the measurement	05
6. Appreciate the importance of water cement ratio	1. Knowledge of cement mix proportion and its importance		05
7. Demonstrate the laying of brick/paver block	1. Basic knowledge of water cement ratio	1. Visit the site and see the consistency of water cement ratio at different water contents.	05
8. Calculate the quantity for masonry work	1. Importance of quantity of masonry work 2. Standard sizes of masonry materials quantity	1. Visit to market for survey of materials used in masonry work	05
9. Prepare a bond used in brick work	1. Knowledge of English, Flemish, stretcher and header bond 2. Process of laying and fixing brick/blocks in position with uniform joints 3. Various adhesives used in brick/block work	3. Prepare a English bond with and without mortar 3. Prepare a Flemish bond with and without mortar 3. Prepare a Stretcher bond with and without 4. Prepare a header bond with and without	05
10. Practice basic masonry activity	1. Method of layout and marking for brick/blockwork 2. Vertical and horizontal alignment using thread line, spirit level, plum bob etc. 3. 3-4-5 method for squaring corners	1. Performing visual checks for brick/block, cement, aggregate 2. Estimate the quantity of material required for work. 3. Demonstrate the breaking of breaks to required size and shape.	05

	4. Method of carrying out checks for preparatory works like surface preparation 5. Techniques for cutting, chiseling of bricks as per closure using appropriate tools	4. Build brick/block wall as per standards tolerance as per relevant drawing. 5. Demonstrate checks for maintaining line and level of each course of brick/blockwall 6. Demonstrate setting out of 90° corners using builders square or 3-4-5 method 7. Demonstrate preparation of lime/cement mortar 8. for pointing as per specification	
11.Construct the staircase and arches	1. Marking and layout of tread and risers for staircase 2. Laying and fixing of bricks in staircase 3. Different components of arch and its terminology 4. Laying and fixing bricks in arches providing key stones and levelling and aligning appropriately 5. Importance of providing proper joint spacing and gauging in arches	1. Demonstrate raking and cleaning of joints as specified prior to drying of bonding mortar 2. Demonstrate set out of tread and riser for staircase 3. Demonstrate building of staircase maintaining bond, alignment and plumb. 4. Demonstrate building of arches, cutting creepers around corners and filling of joints for arches.	05
12. Carryout the block activity	1. Various techniques for repairing and finishing in brick/block work 2. Process of pointing in brickwork ● Flush pointing ● Keyed/groov edpointing 3. Recessed pointing Struck pointing 4. Different mortar mix used for pointing 5. Various tools used for pointing and raking 6. Various method of curing of masonry structure	1. Demonstrate filling of joints with mortar to obtain specified type of pointing using appropriate tools. 2. Demonstrate building of manhole as per required drawing as per specification 3. Demonstrate fixing of paver blocks 4. Demonstrate installations and fixing of arch elements for building arches. 5. Demonstrate removal of deteriorated elements from masonry works using appropriate tools. 6. Demonstrate reinstallation of bricks to match adjacent surfaces. Demonstrate proper filling and raking of repaired work and it's bonding and matching with adjacent surfaces.	05

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DETAIL SYLLABUS
CLASS - XI
SEMESTER – II

Part A: Employability Skills			
Unit 4: Entrepreneurial Skills – III			
Learning Outcome	**Theory (10 hrs)**	**Practical (15 hrs)**	**Duration (25 hrs)**
1. Differentiate between different kinds of businesses	1. Introduction to entrepreneurship 2. Types of business activities	1. Role-play on different kinds of businesses around us	03
2. Describe the significance of entrepreneurial values	1. Meaning of value 2. Values of an Entrepreneur 3. Case study on qualities of an entrepreneur	1. Role-play on qualities of an entrepreneur	03
3. Demonstrate the attitudinal changes required to become an entrepreneur	1. Difference between the attitude of entrepreneur and employee	1. Interviewing employees and entrepreneurs	03
4. Develop thinking skills like an entrepreneur	1. Problems of entrepreneurs 2. Problem-solving 3. Ways to think like an entrepreneur	1. Group activity on identifying and solving problems	04
5. Generate business ideas	1. The business cycle 2. Principles of idea creation 3. Generating a business idea 4. Case studies	1. Brainstorming on generating a business ideas	04
6. Describe customer needs and the importance of conducting a customer survey	1. Understanding customer needs 2. Conducting a customer survey	1. Group activity to conduct a customer survey	04
7. Create a business plan	1. Importance of business planning 2. Preparing a business plan 3. Principles to follow for growing a business 4. Case studies	1. Group activity on developing a business plan	04
Unit 5: Green Skills – III			
Learning Outcome	**Theory (08 hrs)**	**Practical (07 hrs)**	**Duration (15 hrs)**
1. Describe the importance of the main sector of the green economy	1. Meaning of ecosystem, food chain and sustainable development 2. Main sectors of the green economy- E-waste management, green transportation, renewal energy, green construction, and water management	1. Group discussion on sectors of green economy 2. Poster making on various sectors for promoting green economy	06

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2. Describe the main recommendations of policies for the green economy	1. Policies for a green economy	1. Group discussion on initiatives for promoting the green economy 2. Writing an essay or a short note on the important initiatives for promoting green economy.	03
3. Describe the major green sectors/ areas and the role of various stakeholders in the green economy	1. Stakeholders in the green economy	1. Group discussion on the role of stakeholders in the green economy 2. Making solar bulbs.	03
4. Identify the role of government and private agencies in the green economy	1. Role of the government in promoting a green economy 2. Role of private agencies in promoting green economy	1. Group discussion on the role of Government and Private Agencies in promoting a green economy. 2. Poster making on green sectors.	03

Part B: Vocational Skills			
Unit 2: Plastering work			
Learning Outcome	**Theory (20 hrs)**	**Practical (35 hrs)**	**Duration (55 hrs)**
1. Identify types of plastering in a building	1. Importance of plastering 2. Types of plastering	1. Reading and interpreting the sketches/basic working drawing for plastering	10
2. State the material used for plastering and tools required for plastering	1. Material required for plastering 2. Various ratios of mix proportion used for plastering on internal and external surfaces 3. Calculation of quantity required for plastering 4. Tools required for plastering	1. Performing visual checks for sand, cement and surface to be plastered 2. Estimate the quantity of material required for work. 3. Checking and ensuring that the cement mortar mix to confirm to specified proportion 4. Selecting tools and performing checks to confirm their Workability.	20
3. Demonstrate the plastering work	1. Method of plastering for various types of surfaces 2. Process of carrying out layout marking and leveling for plastering works 3. Care and precautions to be made during plastering	1. Demonstrate the application of cement slurry and mortar for obtaining desired thickness of plaster using appropriate tools. 2. Demonstrate checks for vertical and horizontal alignment using appropriate tools of plastered surface. 3. Demonstrate setting out of 90° at corners is required.	25

		4. Demonstrate maintaining slope/fall in case of floor plastering.	

Unit 3: Waterproofing works			
Learning Outcome	**Theory (20 hrs)**	**Practical (25 hrs)**	**Duration (45 hrs)**
1. State the different components of waterproofing works	1. Waterproofing and its advantages 2. Drawings /sketches relevant to waterproofing works 3. Types of lines, projection and its type, dimensioning, 4. Drawing Sheet Layout	1. Reading and interpreting the sketches/basic working drawing for waterproofing works 2. Do drawings/sketches relevant to waterproofing works 3. Drawing of lines 4. Calculating area for waterproofing	05
2. Identifying the tools required for waterproofing work	1. Tools and equipment used for waterproofing works and their standard specifications. 2. Basic levelling tools used in masonry works	1. Identification of tools and equipment used for waterproofing works 2. Selecting tools and performing checks to confirm their workability 3. Handling of tools and equipment	05
3. Do layout marking and levelling for waterproofing works	1. Importance of process of carrying out layout marking and levelling for waterproofing works 2. Different material used for waterproofing and various ratios of mix proportion used for cement mortar mix for waterproofing works. 3. Process of performing various visual checks on materials and surface for waterproofing 4. Different type of defects presents on concrete surfaces such as caulking etc.	1. Identifying common defects in concrete surface prior to waterproofing 2. Identify the material used for waterproofing Calculate the various ratios of mix proportion used for cement mortar mix for waterproofing 3. Do the layout marking and leveling for waterproofing works	10
4. Preparation of the surface before water proofing	1. Surface preparation method prior to waterproofing such as prime coating 2. Filling holes or depressions by cementitious material 3. Procedure of washing down 4. Method of hacking of existing RCC surface 5. Technique of chipping/scraping of protrusions 6. Process of cleansing free of dust 7. Method of priming or sealing of surface	1. Demonstrate preparation of surface prior to waterproofing works 2. Do filling holes or depressions by cementitious material 3. Performing visual checks for sand, cement, waterproofing material and surface to be waterproofed. 4. Demonstrate marking and transferring of required levels for maintaining slope in waterproofing works.	10

	8. Process of removing sharp edge		
5. Demonstrate the waterproofing work	1. Various methods and techniques used to protect waterproofing of the surface from damage as per the site requirements 2. Different type of waterproofing works 3. Different type of waterproofing compounds used for water proofing works 4. Procedure for laying out cementitious waterproofing course.	1. Checking of cement mortar mix to confirm to specified proportion. 2. Demonstrate application of waterproofing cementitious to the prepared surface using appropriate tools. 3. Performing visual checks for sand, cement, waterproofing material and surface to be waterproofed	10
6. Checking of waterproofing work	1. Procedure for checking water leakage in waterproofed surface 2. Procedure for carrying out horizontal and vertical alignment of waterproofed course 3. Procedure for transferring levels on floor for maintaining desired slope. 4. Procedure for carrying out brick bat coba waterproofing.	1. Identify leakages on the waterproofed surface 2. Demonstrate checks for vertical and horizontal alignment using appropriate tools of waterproofed surface. 3. Demonstrate marking and transferring of required levels for maintain slope in waterproofing works.	10

DETAIL SYLLABUS
CLASS - XII
SEMESTER – III

Part A: Employability Skills			
Unit 1: Communication Skills - IV			
Learning Outcome	**Theory (10 hrs)**	**Practical (15 hrs)**	**Duration (25 hrs)**
1. Demonstrate active listening skills	1. Active listening - listening skill, stages of active listening 2. Overcoming barriers to active listening	1. Group discussion on factors affecting active listening 2. Poster making on steps for active listening 3. Role-play on negative effects of not listening actively	10
2. Identify the parts of speech	1. Parts of speech – using capitals, punctuation, basic parts of speech, Supporting parts of speech	1. Group practice on identifying parts of speech 2. Group practice on constructing sentences	10
3. Write sentences	1. Writing skills to practice the following: ● Simple sentence ● Complex sentence ● Types of object 2. Identify the types of sentences ● Active and Passive sentences ● Statement/ Declarative sentence ● Question/ Interrogative sentence ● Emotion/ Reaction or Exclamatory sentence ● Order or Imperative sentence ● Paragraph writing	1. Group activity on writing sentences and paragraphs 2. Group activity on practicing writing sentences in active or passive voice 3. Group activity on writing different types of sentences (i.e., declarative, exclamatory, interrogative and imperative)	05
Unit 2: Self-Management Skills – IV			
Learning Outcome	**Theory (10 hrs)**	**Practical (15 hrs)**	**Duration (25 hrs)**
1. Describe the various factors influencing motivation and positive attitude	1. Motivation and positive attitude 2. Intrinsic and extrinsic motivation 3. Positive attitude – ways to maintain positive attitude 4. Stress and stress management - ways to manage stress	1. Role-play on avoiding stressful situations 2. Activity on listing negative situations and ways to turn it positive	10

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2. Describe how to become result oriented	1. How to become result oriented? 2. Goal setting – examples of result- oriented goals	1. Group activity on listing aim in life	05
3. Describe the importance of self-awareness and the basic personality traits, types and disorders	1. Steps towards self-awareness 2. Personality and basic personality traits 3. Common personality disorders- ● Suspicious ● Emotional and impulsive ● Anxious 4. Steps to overcome personality disorders	1. Group discussion on self-awareness 2. Group discussion on common personality disorders 3. Brainstorming steps to overcome personality disorder	10
Unit 3: Information and Communication Technology Skills – IV			
Learning Outcome	**Theory (06 hrs)**	**Practical (14 hrs)**	**Duration (20 hrs)**
1. Identify the components of a spreadsheet application	1. Getting started with spreadsheet - types of a spreadsheet, steps to start LibreOffice Calc., components of a worksheet.	1. Group activity on identifying components of spreadsheet in LibreOffice Calc.	02
2. Perform basic operations in a spreadsheet	1. Opening workbook and entering data – types of data, steps to enter data, editing and deleting data in a cell 2. Selecting multiple cells 3. Saving the spreadsheet in various formats 4. Closing the spreadsheet 5. Opening the spreadsheet. 6. Printing the spreadsheet.	1. Group activity on working with data on LibreOffice Calc.	03
3. Demonstrate the knowledge of working with data and formatting text	1. Using a spreadsheet for addition – adding value directly, adding by using cell address, using a mouse to select values in a formula, using sum function, copying and moving formula 2. Need to format cell and content 3. Changing text style and font size 4. Align text in a cell 5. Highlight text	1. Group activity on formatting a spreadsheet in LibreOffice Calc 2. Group activity on performing basic calculations in LibreOffice Calc.	02
4. Demonstrate the knowledge of using advanced features in spreadsheet	1. Sorting data 2. Filtering data 3. Protecting spreadsheet with password	1. Group activity on sorting data in LibreOffice Calc	03

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5. Make use of the software used for making slide presentations	1. Presentation software available 2. Stapes to start LibreOffice Impress 3. Adding text to a presentation	1. Group practice on working with LibreOffice Impress tools	02
6. Demonstrate the knowledge to open, close and save slide presentations	1. Open, Close, Save and Print a slide presentation	1. Group activity on saving, closing and opening a presentation in LibreOffice Impress	01
7. Demonstrate the operations related to slides and texts in the presentation	1. Working with slides and text in a presentation- adding slides to a presentation, deleting slides, adding and formatting text, highlighting text, aligning text, changing text colour	1. Group activity on working with font styles in LibreOffice Impress	04
8. Demonstrate the use of advanced features in a presentation	1. Advanced features used in a presentation 2. Inserting shapes in the presentation 3. Inserting clipart and images in a presentation 4. Changing slide layout	1. Group activity on changing slide layout on LibreOffice Impress	03

Part B: Vocational Skills			
Unit 1: Random rubble masonry			
Learning Outcome	**Theory (30 hrs)**	**Practical (30 hrs)**	**Duration (60 hrs)**
1. Carry out preparatory work for Rubble Masonry	1. Tools and tackles for use in the rubble masonry 2. Estimating amount of materials required to complete a rubble masonry job 3. Work preparation of sub-base 4. Compaction method for base prior to commencement of work 5. Selection of the particular type of surface finish as per the site requirements 6. Method of preparation of the sides, edges, bed ofstone to ensure proper bonding of stones 7. Method of mixing mortar for rubble masonry in specified ratio including dry &wet mix 8. Identification of required levels using appropriate tools prior to rubble masonry work	1. Identification and selection of tools for use in the rubble masonry 2. Calculate the amount of materials required to complete a rubble masonry job work 3. Preparation of sub-base 4. Compaction of base by using proper tools. 5. Do the surface finishin gas per the site requirements 6. Making the sides, edges, bed of stone to ensure proper bonding of stones 7. Mixing of mortar for rubble masonry in specified ratio including dry & wetmix	10

2. Identify the material required for random rubble masonry	1. Materials required for random rubble masonry 2. Properties of cement, proportion of mortar and its workability 3. Stones and its quality for random rubble masonry 4. Method of soaking of stones prior to laying	1. Identify the material required for stone masonry 2. Preparation of cement mortar 3. Checking of the quality of stones used in random rubble masonry 4. Soaking of stones prior to laying	10
3. Lay out coursed and un coursed Random Rubble Masonry with undressed or hammer dressed stones	1. Importance of Undressed and hammer dressed stones 2. Laying method for stones to build wall of un-course random rubble or course random rubble 3. Importance of knocking off all projecting corners of the laid stones with joints filled and flushed as per the requirements of the site for the un- course random rubble masonry 4. Use large stones at the corners and at jambs to increase the strength as per the un-course random rubble masonry requirements 5. Method of curing of rubble masonry structure	1. Checking the stonemasonry 2. Laying of stones to build wall of un- course random rubble or course random rubble 3. Knocking off all projecting corners of the laid stones with joints filled and flushed for the un-course random rubble masonry 4. Curing of rubble masonry structure	10
4. Carry out pointing in stone masonry	1. Importance of pointing, various types of pointing works as per specification using appropriate tools and technique 2. Method of raking of joints as specified prior to drying of bonding mortar 3. Importance of joints cleaning and wetting of surface prior to pointing 4. Method of preparation of lime/cement mortar for pointing 5. Importance of filling joints with appropriate mortar to obtain specified type of pointing 6. Need of curing of pointing brick	1. Identification of different types of brick 2. Demonstration of uses of tools and equipment used for dressing of bricks 3. Dressing of bricks	10
5. Lay out course of Dry Rubble Masonry	1. Use of lay and fix stones for construction of walls without use of mortar	1. Laying of fixing stones for construction of walls without use of mortar	10

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	2. Importance of knocking off all projecting corner	2. Practice of knocking off all projecting corner	
6. Check for line, level and alignment	1. Importance of marking and transfer required levels at a regular interval in order to maintain proper slope of finished surface in case of horizontal surface 2. Horizontal and vertical alignment using appropriate tools.	1. Practice of marking levels at a regular interval 2. Checking of horizontal and vertical alignment using appropriate tools	10

DETAIL SYLLABUS
CLASS - XII
SEMESTER – IV

Part A: Employability Skills			
Unit 4: Entrepreneurial Skills-IV			
Learning Outcome	**Theory (10 hrs)**	**Practical (15 hrs)**	**Duration (25 hrs)**
1. Describe the concept of entrepreneurship and the types and roles and functions entrepreneur	1. Entrepreneurship and entrepreneur 2. Characteristics of entrepreneurship 3. Entrepreneurship-art and science 4. Qualities of a successful entrepreneur 5. Types of entrepreneurs 6. Roles and functions of an entrepreneur 7. What motivates an entrepreneur 8. Identifying opportunities and risk-taking 9. Startups	1. Group discussion on the topic "An entrepreneur is not born but created". 2. Conducting a classroom quiz on various aspects of entrepreneurship. 3. Chart preparation on types of entrepreneurs 4. Brainstorming activity on What motivates an entrepreneur	10
2. Identify the barriers to entrepreneurship	1. Barriers to entrepreneurship 2. Environmental barriers 3. No or faulty business plan 4. Personal barriers	1. Group discussion about "What we fear about entrepreneurship" 2. Activity on taking an interview of an entrepreneur.	05
3. Identify the attitude that make an entrepreneur successful	1. Entrepreneurial attitude	1. Group activity on identifying entrepreneurial attitude.	05
4. Demonstrate the knowledge of entrepreneurial attitude and competencies	1. Entrepreneurial competencies 2. Decisiveness 3. Initiative 4. Interpersonal skills- positive attitude, stress management 5. Perseverance 6. Organisational skills- time management, goal setting, efficiency, managing quality.	1. Playing games, such as "Who am I". 2. Brainstorming a business ideas 3. Group practice on "Best out of Waste" 4. Group discussion on the topic of "Let's grow together" 5. Group activity on listing stress and methods to deal with it like Yoga, deep breathing exercises, etc. 6. Group activity on time management	05
Unit 5: Green Skills-IV			
Learning Outcome	**Theory (05 hrs)**	**Practical (10 hrs)**	**Duration (15 hrs)**
1. Identify the benefits of the green jobs	1. Green jobs 2. Benefits of green jobs	1. Group discussion on the importance of green job.	08

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	3. Green jobs in different sectors: ● Agriculture ● Transportation ● Water conservation ● Solar and wind energy ● Eco-tourism ● Building and construction ● Solid waste management ● Appropriate technology	2. Chart preparation on green jobs in different sectors.	
2. State the importance of green jobs	1. Importance of green jobs in ● Limiting greenhouse gas emissions ● Minimizing waste and pollution ● Protecting and restoring ecosystems ● Adapting to the effects of climate change	1. Preparing posters on green jobs. 2. Group activity on tree plantation. 3. Brainstorming different ways of minimizing waste and pollution	07

Part B: Vocational Skills			
Unit 2: IPS/ Tremix and Vacuum Dewatered Flooring			
Learning Outcome	**Theory (30 hrs)**	**Practical (40 hrs)**	**Duration (70 hrs)**
1. Identify components of IPS/ Tremix flooring	1. Meaning of IPS/Tremix flooring 2. Purpose 3. Material used in construction of IPS/Tremix flooring	1. Identify the components of IPS/Tremix flooring 2. Draw the figure offlooring	05
2. Identification of special tools for IPS/ Tremix flooring	1. Importance of masonry specialized tools for Tremix flooring such as ● Vacuum de- watering Pump ● Floater Machine ● Double beam ● Screen Vibrator	1.Identification of components and parts of ● Vacuum de- watering Pump ● Floater Machine ● Double beam ● Screen Vibrator	05
3. Carry out preparatory work prior to IPS/ Tremix flooring	1. Importance of sub-base 2. Process of preparing the sub-base by watering and ramming 3. Steps of checking of levelling, undulation, gaps, misalignment in formwork/reinforcement and ensure proper cover for reinforcement is provided	1. Inspecting the work area prior to concreting, ensure levelling in case of any undulations observed on the surface prior to concreting 2. Ensuring the surface is prepared appropriately and report any deviation in slope and alignment in PCC 3. Reporting any gaps in formwork to avoid leakage	10

	4. Method /process to preparing the sub- base by watering and ramming	4. Reporting any misalignment in formwork/ reinforcement and ensure proper cover for reinforcement is provided	
4. Check for line, level and alignment	1. Importance of slope in PCC (Plain Cement Concrete) in a base course 2. Reference levels and its importance 3. Method of marking reference levels and transfer the markings to all locations where flooring is to be done	1. Mark reference level on the wall and transfer this marking to all floor locations using appropriates tools 2. Mark flooring thickness and provide dummy level dots at specified intervals for ensuring required slope	10
5. Check the materials used for IPS/ Tremix flooring in case of manual mixing	1. Various type and grade of cement used 2. Water /cement ratio and type of aggregates 3. Different mix proportion/grade of concrete 4. Need of sequence of concrete pouring and placing 5. Manual mixing of concrete and nominal mix proportions	1. Checking the grade of cement prior to use in case of manual mixing 2. Sieving fine aggregate as per grade requirement 3. Checking concrete mixed in appropriate proportion	10
6. Checking the materials used for IPS/ Tremix flooring in case of machine mixing	1. Machine mixing of concrete and nominal mix proportions	1. Visually assess the concrete mix for usability and workability 2. Notify superiors for detrimental quality of concrete 3. Ensure specified concrete mix is used at allocated location 4. Check that panels prepared are of specified size and type.	10
7. Carry out IPS Flooring work	1. Meaning of IPS Flooring, use and advantages 2. Method and advantages of covering to reinforcement with respect to size of reinforcement 3. Method of pouring of concrete in alternate panels 4. How to avoid shrinkage cracks in concrete 5. Various admixtures used in concreting. 6. Different types of vibrators, their influence area and use. 7. Contraction and expansion joints. 8. Cutting tools for providing joints.	1. Fixing the glass, aluminium or brass strip in cement mortar with their tops at appropriate level and according to slope 2. Fix the panels made as per specified size 3. Practice of pouring concrete in alternate panels/specified panels as per requirement. 4. Removing practice of excess cement slurry and any marks on the surface. Levelling the concrete surface with a straight edge and to the required finish with a wooden float / trowel	10

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	9. Importance of final troweling process before the concrete is hardened	5. Spreading cement punning over the IPS concrete for smooth finish surface and allow it to soak into the concrete, as per requirement 6. Setting construction joints and expansion joints as per requirement 7. Pouring concrete to the specified levels to maintaining required.	
8. Carry out Tremix/ IPS	1. Removal of excess water process using Vacuum dewatered machine 2. Importance of screed vibrator and its use 3. Role of hardener usage along with floater machine at the time of finishing the floor surface to increase abrasion resistance of the floor 4. How to provide for space for narrow passage for operating float vibrator along a wall	1. Level the surface and lay stone soling/ boulder soling layer 2. Lay the floor with slope maintained in PCC work above the stone soling 3. Remove excess water from the top layer of wet concrete without removing cement of sand particles through vacuum de- watering machines 4. Ensure floater work within green concrete surface 5. Carry out Tremix flooring in specified panel on RCC floors ensuring intactness of rebar and cover 6. Cut grooves on concrete at specified intervals for construction joints provide expansion joints as per requirement 7. Carry out curing of finished concrete asper specifications 8. Ensure finished levels have required slope knowledge	05
8. Describe VDF (Vacuum Dewatered Flooring) along with the tools used for it.	1. Meaning and purpose of VDF 2. Standards practices of VDF 3. Tools used in VDF	1. Enlist the tools used in Vacuum dewatered flooring. 2. Visit the site where the process of Flooring is being carried out.	02
9. Explain the laying procedure of VDF flooring along with its constituents.	1. Process of preparation of subgrade for VDF flooring. 2. Different mix proportions/grades of concrete for VDF flooring 3. Sequence and procedure concrete pouring and placing in specific panels with the provision of cover for	1. Demonstrate the checks to be carried out for inspection of area prior to concreting. 2. Demonstrate the checks for assessing the quality of material used in manual and machine mixing of mortar for VDF flooring works.	03

	reinforcement w.r.t size of reinforcement. 4. Process of water removal using vacuum dewatering machine.		
Unit 3: Environment Health and Safety			
Learning Outcome	**Theory (20 hrs)**	**Practical (15 hrs)**	**Duration (35 hrs)**
1. Explain the risks of hazards with the safety measures adopted at the site	1. Types and identification of hazards including fire hazards at the construction site. 2. Safety control measure and actions to be taken at the time of emergency.	1. Demonstrate the operating procedure of fire extinguishers. 2. Demonstrate the use of PPEs as per the work requirement.	10
2. Describe the role of manpower for safety at the site	1. Importance of participation of workers in safety drills. 2. Reporting procedure to the concerned authority in case of emergency situations.	1. Demonstrate the procedure to report to the concerned authority regarding the outbreak/hazard of any infectious disease/pandemic.	05
3. Explain the procedure of handling, storing and stacking of materials at the site.	1. Different types of tools accessories and equipment needed at the construction site. 2. Handling, storing and stacking of the tools, materials and accessories.	1. Demonstrate the methods to clean and disinfect all the materials, tools and supplies before and after use.	10
4. Explain the disposal method of the waste generated at the construction site.	1. Different types of waste generated at the construction site 2. Disposal methods of waste generated	1. Demonstrate safe waste disposal practices followed at the construction site.	05
5. Describe various types of health safety measures taken at the construction site	1. Basic medical tests required for working at construction site. 2. Purpose and Importance of vertigo test 3. Different types of infectious disease that can spread/originate at the construction site. 4. Methods to check the spread of infectious disease. 5. Symptoms and cure of various infectious diseases.	1. Demonstrate the practices to maintain personal hygiene, workplace hygiene and site/workplace sanitization.	05

ORGANISATION OF FIELD VISITS

In a year, at least 3 field visits/educational tours should be organised for the students to expose them to the activities in the workplace.

Visit a construction site and observe the following: Location, Site, construction site, Office building, newly constructed site, building store, construction site. During the visit, students should obtain the following information from the owner or the supervisor of the construction site:

1. Construction activity being taken
2. Residential/Commercial project
3. Technology adopted
4. Type of material used
5. Manpower engaged
6. Total expenditure of project
7. Total annual income